

IN THE CLAIMS

1. (Previously Presented) A fixation device for fixing a fracture in a bone structure, said fixation device comprising:

a bendable fixation pin adapted for penetrating through an unstable bone fragment of a bone structure across a fracture and into a stable bone fragment of said bone structure, said pin having an end extending out from said unstable bone fragment,

a fixation plate adapted for being secured to the stable bone fragment at a distance from said end of said fixation pin,

said fixation plate being engageable with said end of said bendable pin to prevent said pin from backing out of the bone structure while providing restraint against movement of said pin in the plane of the plate, said pin including a bent end portion which is bent at an angle so as to be adapted to be substantially parallel to a superficial surface of the bone structure, said fixation plate having a lower surface adapted to face the superficial surface of the bone structure when secured to the stable bone, said fixation plate being provided with a groove at said lower surface extending partially through the fixation plate for engaging said bent end portion of said pin to prevent the pin from backing out of the unstable bone fragment while providing the restraint of the pin for movement in the plane of the plate.

Claims 2-4 (Cancelled)

5. (Previously Presented) A fixation device for fixing a fracture in a bone structure, said fixation device comprising:

a bendable fixation pin adapted for penetrating through an unstable bone fragment of a bone structure across a fracture and into a stable bone fragment of said bone structure, said pin having an end extending out from said unstable bone fragment,

a fixation plate adapted for being secured to the stable bone fragment at a distance from said end of said fixation pin,

said fixation plate being engageable with said end of said bendable pin to prevent said pin from backing out of the bone structure while providing restraint against movement of said pin in the plane of the plate, wherein said end of said fixation pin includes a bent end portion which is engaged by said fixation plate to prevent said pin from backing out of the unstable bone fragment while providing restraint against movement of said pin in the plane of the plate, said fixation plate including means for engaging said bent end portion of said fixation pin, said means for engaging said bent end portion of said fixation pin being constituted by a lower surface of said fixation plate which bears against said bent end portion of said fixation pin from above to restrain said pin with respect to the bone structure.

Claims 6 and 7 (Cancelled)

8. (Previously Presented) The fixation device as claimed in claim 1, wherein said bent portion of said pin is bent longitudinally of said fixation plate.

9. (Previously Presented) The fixation device as claimed in claim 1, wherein said bent portion of said pin is bent transversely of said fixation plate.

10. (Previously Presented) The fixation device as claimed in claim 1, wherein said groove in said fixation plate has a side opening to permit the bent portion of said pin to protrude therefrom.

11. (Previously Presented) The fixation device as claimed in claim 1, wherein said bent portion of said pin has a U-shape, said fixation plate having an outer surface with a further groove in which said bent portion of U-shape is gripped.

12. (Previously Presented) A fixation device for fixing a fracture in a bone structure, said fixation device comprising:

a bendable fixation pin adapted for penetrating through an unstable bone fragment of a bone structure across a fracture and into a stable bone fragment of said bone structure, said pin having an end extending out from said unstable bone fragment,

a fixation plate adapted for being secured to the stable bone fragment at a distance from said end of said fixation pin,

said fixation plate being engageable with said end of said bendable pin to prevent said pin from backing out of the bone structure while providing restraint against movement of said pin in the plane of the plate, wherein said end of said fixation pin includes a bent end portion which is engaged by said fixation plate to prevent said pin from backing out of the unstable bone fragment while providing restraint against movement of said pin in the plane of the plate, said fixation plate including means for engaging said bent end portion of said fixation pin, wherein said fixation plate has an end and said means on said fixation plate comprises two tabs extending longitudinally at said end in transversely spaced relation,

said tabs facing one another to engage said bent portion of the pin from above and below.

13. (Original) The fixation device as claimed in claim 12, wherein said tabs are at different levels at said end of the fixation plate.

14. (Original) The fixation device as claimed in claim 12, wherein said tabs are at the same level at said end of the fixation plate and said bent portion of said pin is bent to pass between said tabs.

15. (Previously Presented) A fixation device for fixing a fracture in a bone structure, said fixation device comprising:

a bendable fixation pin adapted for penetrating through an unstable bone fragment of a bone structure across a fracture and into a stable bone fragment of said bone structure, said pin having an end extending out from said unstable bone fragment,

a fixation plate adapted for being secured to the stable bone fragment at a distance from said end of said fixation pin,

said fixation plate being engageable with said end of said bendable pin to prevent said pin from backing out of the bone structure while providing restraint against movement of said pin in the plane of the plate, wherein said end of said fixation pin includes a bent end portion which is engaged by said fixation plate to prevent said pin from backing out of the unstable bone fragment while providing restraint against movement of said pin in the plane of the plate, said fixation plate including means for engaging said bent end portion of said fixation pin, wherein said means for engaging said bent portion of fixation pin

comprises a groove in said plate for receiving said bent portion of said pin wherein said fixation plate has an end, said groove extending longitudinally in said fixation plate and being open at said end of said fixation plate.

16. (Original) The fixation device as claimed in claim 15, wherein said bent portion of said fixation pin is bent at a second bend to form a second bent portion, said fixation plate having a hole through which said second bent portion of said pin can extend.

17. (Previously Presented) The fixation device as claimed in claim 1, wherein said fixation plate has an end with a groove therein, said groove having a V-shape in a longitudinal direction of the fixation plate and narrowing in a direction from an undersurface of said fixation plate to an outer surface of said fixation plate.

18. (Previously Presented) A fixation device for fixing a fracture in a bone structure, said fixation device comprising:

a bendable fixation pin adapted for penetrating through an unstable bone fragment of a bone structure across a fracture and into a stable bone fragment of said bone structure, said pin having an end extending out from said unstable bone fragment,

a fixation plate adapted for being secured to the stable bone fragment at a distance from said end of said fixation pin,

said fixation plate being engageable with said end of said bendable pin to prevent said pin from backing out of the bone structure while providing restraint against movement of said pin in the plane of the plate, said fixation plate including means for

engaging said end of said fixation pin, wherein said means for engaging said end of said fixation pin comprises a groove in said plate for receiving said end of said pin, and a barb on said pin to engage said fixation plate when said pin is received in said groove.

19. (Original) The fixation device as claimed in claim 1, wherein said pin has a smooth end for penetrating into said stable bone fragment.

20. (Original) The fixation device as claimed in claim 1, wherein said pin has a threaded end for threaded engaging in said stable bone fragment.

21. (Previously Presented) The fixation device as claimed in claim 1, wherein said bent end portion of said fixation pin has a length for extending a distance from its entry site into the unstable bone fragment, said groove in said fixation plate receiving said bent end portion of said pin.

Claims 22 and 23 (Cancelled)

24. (Previously Presented) The fixation device as claimed in claim 25, wherein said end of the pin passes in a bore in said fixation plate and said fixation plate is crimped at said bore.

25. (Previously Presented) A fixation device for fixing a fracture in a bone structure, said fixation device comprising:

a bendable fixation pin adapted for penetrating through an unstable bone fragment of a bone structure across a fracture and into a stable bone fragment of said bone structure, said pin having an end extending out from said unstable bone fragment,

a fixation plate adapted for being secured to the stable bone fragment at a distance from said end of said fixation pin,

said fixation plate being engageable with said end of said bendable pin to prevent said pin from backing out of the bone structure while providing restraint against movement of said pin in the plane of the plate, wherein said fixation plate has longitudinally extending tabs at an end of said fixation plate defining a groove in which said end of the pin extends, said tabs being crimped against said end of the pin to be deformingly and clampingly engaged therewith.

26. (Original) The fixation device as claimed in claim 25, wherein two said tabs are disposed one above the other at one side of the pin and a further said tab is disposed at an opposite side of the end of the pin.

27. (Original) The fixation device as claimed in claim 26, wherein said further tab is at a level between said two tabs disposed one above the other.

28. (Previously Presented) The fixation device as claimed in claim 1, wherein said fixation plate has a hole in which said pin extends, said pin having a tip end which is cut in proximity to a top surface of the plate and is welded to said plate thereat.

29. (Previously Presented) A method of fixing a fracture in a bone structure, said method comprising:

inserting a fixation pin into a stable fragment of a bone structure across a fracture and leaving an end of the pin extending from an unstable fragment of the bone structure,

providing a fixation plate having means for securing the fixation plate to said bone structure at a distance from the extending end of said fixation pin,

bending said end of said fixation pin to provide a bent portion extending at an angle with respect to an axis of the pin so that the bent portion extends parallel to the bone structure,

engaging said fixation plate with said bent portion of said pin to prevent said pin from backing out of the bone structure while providing restraint against movement of said pin in the plane of the plate, and

securing the fixation plate to the bone structure.

30. (Original) A method of fixing a fracture in a bone structure said method comprising:

inserting a fixation pin into stable fragment of a bone structure across a fracture and leaving an end of the pin extending from an unstable fragment of the bone structure,

inserting the end of the pin through a hole in a fixation plate,

securing the fixation plate to said bone structure at a distance from the extending end of said fixation pin,

cutting said end of said fixation pin in proximity to a top surface of the fixation

plate, and

welding said end of the fixation pin and said fixation plate together to prevent said pin from backing out of the bone structure while providing restraint against movement of said pin in the plane of the plate.

31. (Previously Presented) The method as claimed in claim 30, wherein said fixation plate is formed with a groove therein at an end of the fixation plate said groove extending from a lower surface of the fixation plate partially through the thickness of the plate so that engagement of the fixation plate with the bent end of the pin is effected by placing the fixation plate on the bone structure to insert the bent end of the pin into the groove, whereby, when secured, the fixation plate blocks movements of the bent end of the pin.

32. (Previously Presented) The fixation device as claimed in claim 1, wherein said groove is dimensioned to accommodate said bent end portion of the pin upon placement of the fixation plate on the bone structure.

33. (Previously Presented) The fixture device as claimed in claim 32, wherein said groove has a rectangular cross section and extends in said fixation plate to an end thereof at which the groove opens outwardly of the plate.

34. (Previously Presented) A fixation device for fixing a fracture in a bone structure, said fixation device comprising:

a bendable fixation pin adapted for penetrating through an unstable bone

fragment of a bone structure across a fracture and into a stable bone fragment of said bone structure, said pin having an end extending out from said unstable bone fragment, a fixation plate adapted for being secured to the stable bone fragment at a distance from said end of said fixation pin,

said fixation plate having a lower surface with a dimple therein for receiving said extending end of said bendable pin to prevent said pin from backing out of the bone structure while providing restraint against movement of said pin in the plane of the plate.

35. (Cancelled)

36. (Cancelled)

37. (Cancelled)